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ANNUAL INDEX NUMBERS OF FARM PRICES, CALIFORNIA,
1910 - 1932

by

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A Preliminary Report

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Many market price and farm price series of California's major commercial agricultural crops have been compiled and disseminated. A composite or average measure of prices received by California producers has, however, not been available up to the present time. The United States index of farm prices prepared by the United States Department of Agriculture has been used in many instances in California to represent the general movements of farm prices. Because of the variety of California crops and the special nature of their harvesting periods, a national index cannot serve adequately for representing farm price movements in California. In response to this need, a California farm price index has been prepared and is here presented in preliminary form. A complete analysis of the index will come forward in printed form at a later date. The index number series here presented includes prices of thirty-five commodities from which 85 to 90 per cent of the gross cash income of the farmers of the state is derived.

Crop-year Annual Index Numbers and Base Period.--For most purposes, annual index numbers of farm prices based on crop-year data are more significant than those based on calendar-year prices. This is due to the fact that the year-to-year fluctuations in the prices of most agricultural products are accounted for, to a considerable extent, by variations in the supplies of those products. The supplies of most agricultural products are determined on a crop-year basis which does not correspond with the calendar year.

Due to the character of the seasons and the types of products grown, a fair approximation to a crop-year period which is satisfactory for most crops in California can be obtained by considering July 1 as the dividing date between successive crop years. Hence, the annual index numbers of California farm prices have reference to crop years beginning July 1 and ending June 30.

In view of recent agricultural legislation, prewar price relationships are significant. The United States index number of farm prices is based on the five-year period August, 1909 to July, 1914 as 100. Due to lack of data, the California farm price index could not begin with 1909; it is therefore based upon the period July, 1910 to June, 1915 as 100. The United States index of farm prices included in this report for comparison with the California index, has, in order to obtain comparability, been recomputed, using July, 1910 to June, 1915

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as 100, and each year, as in the California index, represents a twelve-month July to June crop year.

Farm Prices in California and in the United States since 1910.--Annual index numbers of the farm prices of all products combined and of major groups of products, in California and in the United States as a whole, are presented in tables 1 and 2.

As shown in figure 1, farm prices in California were comparatively stable from 1910 until 1915. Between 1915 and 1919, they were rising at a very rapid rate, reaching a peak in 1919 at a level over 100 per cent higher than the level of 1910 to 1915. The declines of the next four years carried farm prices in California to a level approximately 40 per cent above prewar years, a level which was maintained until 1929. Since 1929, prices have fallen at a rapid rate, reaching in the year beginning July 1, 1931 an average of 24 per cent below the 1910-1914 level.

During the early stages of the War, when prices were rising at a rapid rate, farm price advances in the United States as a whole preceded the rise in California farm prices (figure 2). Similarly, in each of the two post-war periods of price declines, farm prices in California lagged behind farm prices in the United States. These lags in price movements were due, to a large extent, to the character of the commodities produced in the two areas. The United States farm-price index is weighted heavily with the staple products such as cotton, wheat, corn, hogs, beef cattle, and potatoes. The index of farm prices for California, on the other hand, includes many specialty crops of major importance in the state. When prices in general rise or fall, the staple food products are usually among the first affected.

Method of Constructing the Index Number Series.--The index number series are of the type technically known as the "weighted aggregative". In the construction of an annual index number series of this type, the price of each commodity for a given year is multiplied by the "weight" assigned to that commodity. The products thus obtained are then added, and their sum, or aggregate, is expressed as a percentage of the corresponding aggregate for the base period (July, 1910-June, 1915 in this case). This ratio expressed as a percentage is the index number for the year given. The index number for each year is obtained in this manner.

Basis of Weighting.--Since some commodities are of much more importance than others, in so far as the income derived from their sale by the farmers of California is concerned, the prices of each commodity are "weighted" in the index in proportion to the estimated annual quantity of that commodity marketed during the five-year period, 1924-1928, inclusive.

Sources of price data.--The price data used in the construction of the annual index numbers of farm prices for California are presented in table 3.

The prices of beef cattle, veal calves, hogs, sheep, lambs, market milk, butterfat (since 1929), butter, eggs, chickens, wool, horses, barley, wheat, oats, corn, hay, alfalfa (since 1915), cotton (since 1921), potatoes, beans, oranges, (since 1912), lemons (since 1912), and apples are unweighted averages of the monthly prices received by producers at local farm markets in California as reported by the Division of Crop and Livestock Estimates of the United States

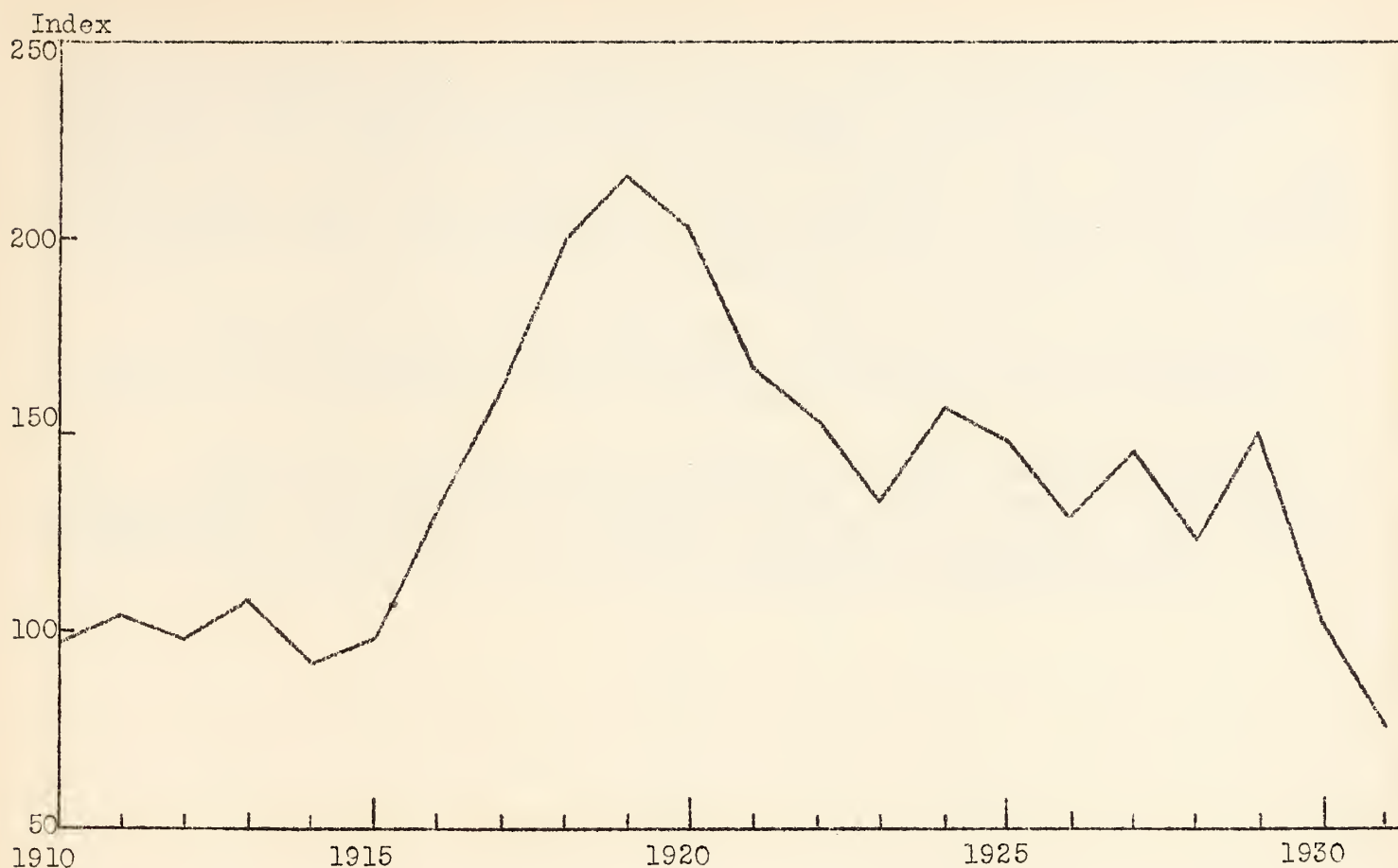


Figure 1. Annual index numbers of farm prices, California, years beginning July 1, 1910-1931. (July, 1910 - June, 1915 = 100.)

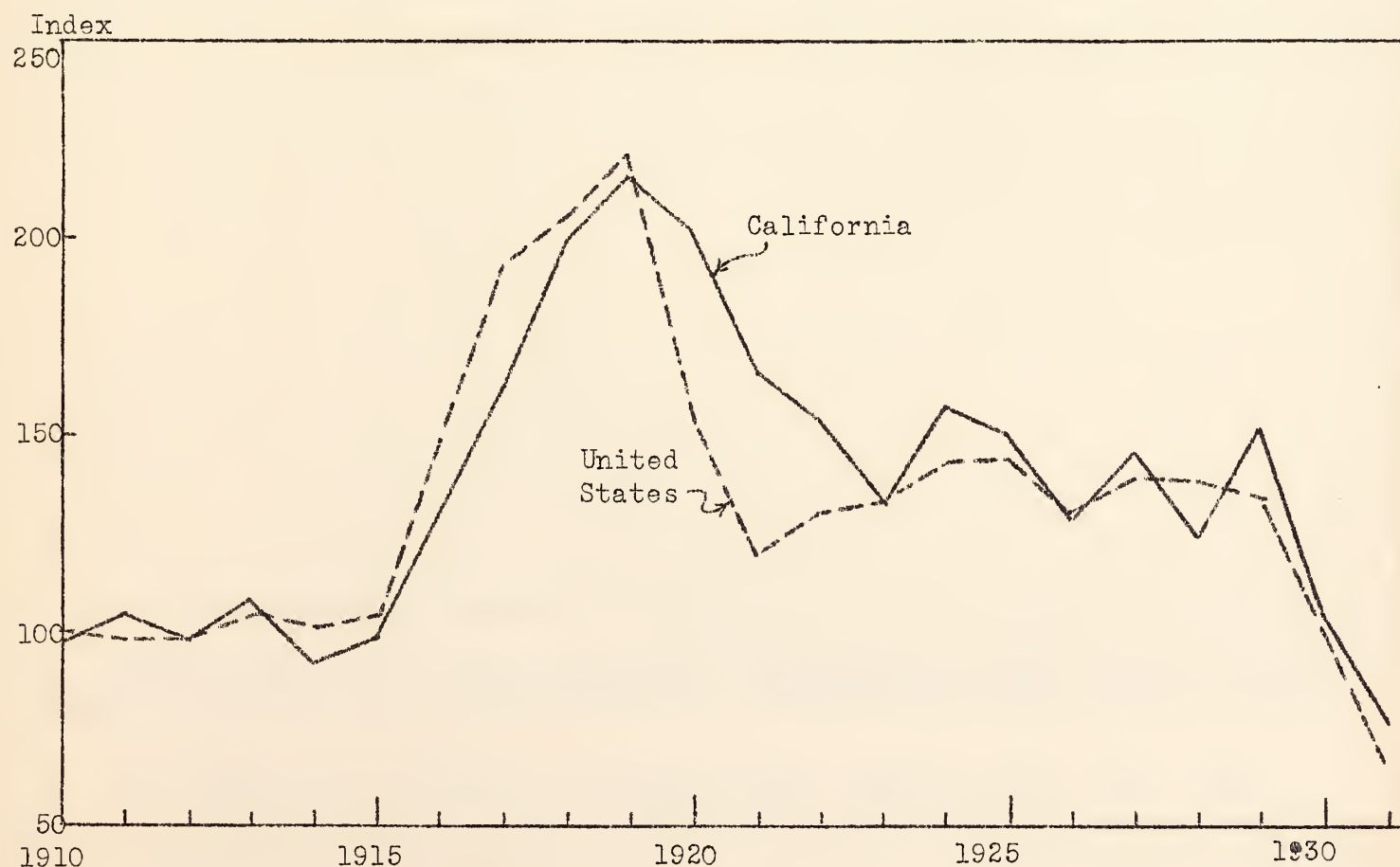


Figure 2. Annual index numbers of farm prices in California and in the United States, years beginning July 1, 1910-1931. (July, 1910 - June, 1915 = 100.)



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Department of Agriculture. A monthly series of "milk fat prices in cents per pound for churning cream", as published in table 43 on page 86 of California Agricultural Experiment Station Bulletin 514¹ was used to supplement the butterfat price series for the period prior to December, 1929. A series of the monthly prices received by growers at Modesto, California, for alfalfa was used for the years 1910 to 1914 inclusive. These prices were obtained from table 13 on page 33 of California Agricultural Experiment Station Bulletin 521².

The prices of rice and sugar beets, and of cotton for the years prior to 1921, are the December first farm prices, as published by the Division of Crop and Livestock Estimates of the United States Department of Agriculture.

The prices of grapes, peaches, pears, apricots, cherries, raisins, prunes, walnuts, and almonds were compiled by the author from available sources of information. Each price is intended to represent an average of the prices received by producers for the product throughout the marketing season.

¹ Voorhies, E. C. Dairy products. California Agr. Exp. Sta. Bul. 514. 1931.

² Braun, E. W. Alfalfa. California Agr. Exp. Sta. Bul. 521. 1931.



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TABLE 1

Annual Index Numbers of Farm Prices, California,
Years beginning July First, 1910-1931

(July, 1910 - June, 1915 = 100)

Year beginning July first	All products	Livestock and livestock products				Crops			
		All	Meat animals	Dairy products	Poultry products	All	Grains	Field crops other than grains	Fruits
1910	97	101	101	102	100	95	87	107	92
1911	104	99	90	107	98	108	106	99	117
1912	98	101	99	107	94	95	103	107	88
1913	108	102	106	95	107	111	101	103	111
1914	92	98	104	90	102	91	103	84	92
1915	98	100	104	92	103	96	97	106	97
1916	131	118	125	105	119	139	140	177	130
1917	161	152	166	132	144	171	208	210	152
1918	199	179	183	155	199	214	203	197	214
1919	216	177	177	170	179	243	247	247	251
1920	202	146	142	146	154	246	156	186	311
1921	167	122	115	127	124	199	111	130	284
1922	154	131	124	135	124	175	115	152	223
1923	133	128	121	132	123	140	115	175	147
1924	157	131	129	121	135	175	170	177	181
1925	149	139	147	131	132	159	138	167	159
1926	129	132	144	126	118	129	120	139	126
1927	146	133	151	127	110	153	135	142	165
1928	124	142	166	131	120	116	115	158	103
1929	151	133	153	122	122	158	112	170	155
1930	103	100	116	95	87	108	83	115	119
1931	76	78	81	76	77	73	67	81	69

The products included under each of the groups are as follows:

Meat animals - beef cattle, veal calves, hogs, sheep, and lambs.

Dairy products - milk, butterfat, and butter.

Poultry products - eggs and chickens.

Grains - barley, wheat, oats, corn, and rice.

Field crops other than grains - hay, alfalfa, cotton, potatoes, beans, and sugar beets (since 1916).

Fruit - oranges (since 1912), lemons (since 1912), apples, peaches, pears, apricots, cherries, grapes, raisins, and prunes.

Livestock and livestock products - "meat animals", "dairy products", "poultry products", wool, and horses.

Crops - "grains", "field crops other than grains", "fruits", walnuts, and almonds.

All products - "livestock and livestock products" and "crops".

TABLE 2

Annual Index Numbers of Farm Prices, United States,
Years beginning July First, 1910-1931

(July, 1910 - June, 1915 = 100)

Year beginning July first	All products	Livestock and livestock products			Crops		
		Meat animals	Dairy products	Poultry products	Grains	Fruits and vegetables	Cotton and cottonseed
1910	99	93	98	95	92	98	124
1911	98	87	101	98	105	122	91
1912	98	103	101	97	91	88	102
1913	104	110	101	106	95	106	108
1914	101	107	99	104	117	86	75
1915	104	109	98	104	107	99	102
1916	147	142	112	138	168	189	161
1917	193	190	139	169	224	164	250
1918	205	208	162	194	221	173	254
1919	221	189	185	217	240	256	311
1920	153	138	170	191	161	165	152
1921	120	106	137	150	100	177	140
1922	130	110	141	142	108	131	210
1923	133	103	144	141	109	132	244
1924	143	124	131	158	151	135	205
1925	144	143	139	157	136	203	164
1926	130	141	137	148	121	155	115
1927	139	140	138	146	132	163	167
1928	138	157	141	154	116	121	163
1929	134	149	133	152	114	171	141
1930	98	111	109	105	80	126	86
1931	66	72	83	85	50	80	52

The products included under each of the groups are as follows:

Meat animals - beef cattle, calves, hogs, sheep, and lambs.

Dairy products - milk and butter (representing butter, butterfat, and cream sold by farmers).

Poultry products - chickens and eggs.

Grains - wheat, corn, oats, barley, rye, and kafir (since June, 1923).

Fruits and vegetables - apples, oranges, grapefruit, potatoes, sweet potatoes, beans, onions, and cabbage.

Cotton and cottonseed - cotton and cottonseed.

All products - "meat animals", "dairy products", "poultry products", "grains", "fruits and vegetables", "cotton and cottonseed", horses (representing horses and mules), hay, flax, tobacco (since June, 1923), and wool.

Sources of data:

Index numbers of farm prices, United States, by months, August, 1909 - July, 1914 = 100.

1910-1930: U. S. Dept. Agr. 1931 Yearbook, pp. 1018-1020.

1931-1932: Monthly issues of "The Agricultural Situation", published by the United States Department of Agriculture.

Index numbers were converted to the July, 1910-June, 1915 base by considering the unweighted average of the sixty monthly index numbers for this period, on the August, 1909-July, 1914 base, as equal to 100.

TABLE 3

Annual Farm Prices included in California Farm Price Index
Crop Years Beginning July First

Year begin- ning July first	Beef cattle (dollars per 100 pounds)	Veal calves (dollars per 100 pounds)	Hogs (dollars per 100 pounds)	Sheep (dollars per 100 pounds)	Lambs (dollars per 100 pounds)	Market milk (dollars per 100 pounds)	Butter- fat (cents per pound)	Butter (cents per pound)	Eggs (cents per dozen)	Chick- ens (cents per pound)	Wool (cents per pound)	Horses (dollars per head)
1910	5.82	6.57	7.89	5.19	6.23	2.54	33.2	30.8	28.8	14.9	13.6	146
1911	5.53	6.23	6.32	4.34	5.12	2.80	33.0	30.9	28.2	14.6	12.6	154
1912	6.14	6.82	6.77	4.69	5.62	2.53	37.3	32.6	27.0	14.1	14.8	142
1913	6.63	7.25	7.72	4.62	5.60	2.24	32.8	31.2	31.0	15.7	13.4	129
1914	6.38	7.77	6.54	5.47	6.48	2.14	31.0	29.5	29.3	15.2	16.5	119
1915	6.15	7.47	6.64	5.98	7.07	2.24	31.2	29.8	29.7	15.6	19.5	112
1916	7.09	8.07	9.09	7.68	9.06	2.32	38.8	34.2	34.3	17.5	30.7	112
1917	8.68	9.12	14.08	10.92	12.92	2.84	50.4	45.9	41.4	22.3	50.8	114
1918	9.89	10.72	15.56	10.86	12.81	2.99	64.3	56.0	57.5	29.1	46.1	111
1919	9.61	11.59	14.51	9.70	11.96	3.32	69.4	61.7	51.1	29.5	44.6	109
1920	7.92	9.76	11.41	6.82	8.97	3.13	55.5	53.0	43.1	28.8	18.7	103
1921	6.08	8.21	9.58	5.39	8.18	2.92	45.5	43.2	34.0	23.6	19.7	96
1922	6.33	8.16	9.46	7.47	11.09	2.82	52.3	46.0	34.5	24.0	36.3	96
1923	6.46	8.28	7.94	7.53	11.12	2.74	51.9	47.9	34.1	24.0	32.7	92
1924	6.49	8.27	10.18	7.68	11.47	2.54	46.9	46.8	37.9	25.3	38.7	97
1925	6.92	9.42	13.20	8.43	12.25	2.60	53.3	51.2	36.5	26.2	35.4	91
1926	7.04	9.68	12.58	7.67	11.67	2.64	49.2	47.0	32.1	26.1	28.3	88
1927	8.62	10.68	9.78	8.25	12.04	2.66	49.5	46.6	29.9	24.5	31.2	81
1928	9.93	12.08	10.27	8.45	12.20	2.67	52.1	49.2	32.5	26.4	32.7	79
1929	9.05	11.32	10.22	7.23	10.52	2.64	45.8	44.5	33.4	26.2	22.5	76
1930	6.60	9.18	8.85	4.48	7.01	2.26	32.6	33.8	23.2	21.9	15.9	65
1931	4.98	6.36	5.13	3.11	5.24	1.83	25.8	26.8	20.9	17.7	10.6	54

TABLE 3 (continued)

Year begin- ning July first	Barley (cents per bushel)	Wheat (cents per bushel)	Oats (cents per bushel)	Corn (cents per bushel)	Hay (dollars per ton)	Alfalfa (dollars per ton)	Cotton (cents per pound)	Potatoes (cents per bushel)	Beans (dollars per bushel)	Oranges (dollars per box)	Lemons (dollars per box)	Apples (dollars per bushel)
1910	55.7	91.8	49.2	81.5	9.37	9.85	13.3	96.6	2.83			0.84
1911	79.8	91.3	55.3	89.2	11.32	10.19	7.5	106.1	2.64			0.95
1912	69.2	95.4	54.6	88.0	14.11	12.00	12.5	59.5	2.68	1.94	3.39	0.85
1913	64.0	94.2	54.1	86.1	12.39	9.15	13.0	70.3	2.84	2.44	3.71	1.12
1914	58.4	110.8	49.5	90.9	8.18	7.14	7.0	74.8	2.79	1.76	2.54	0.82
1915	60.0	96.8	47.9	90.1	10.95	9.42	11.2	89.0	3.11	1.83	2.02	0.89
1916	97.1	152.6	71.2	127.3	14.45	13.53	20.0	176.6	5.39	2.44	2.73	1.00
1917	135.1	208.3	88.8	187.8	19.14	18.62	28.0	125.8	6.21	2.76	3.26	1.09
1918	119.6	213.6	90.0	191.7	18.39	17.05	30.0	137.7	4.79	4.07	3.83	1.82
1919	155.5	221.0	99.8	193.4	21.57	21.73	43.0	250.1	4.40	3.43	3.20	2.07
1920	93.9	178.2	78.1	132.5	18.98	16.12	30.0	178.4	3.50	2.87	2.03	1.54
1921	62.9	115.2	53.8	88.0	12.78	11.46	16.6	129.2	3.45	2.90	2.87	1.69
1922	68.9	115.3	62.9	96.5	13.67	13.82	23.2	95.9	3.80	2.70	3.17	1.57
1923	72.1	108.6	61.2	108.6	13.74	15.92	30.0	135.9	3.60	1.90	2.33	1.54
1924	109.0	157.9	81.7	141.4	19.20	19.06	24.1	143.5	4.35	3.07	3.04	1.63
1925	68.0	147.2	55.0	118.2	13.35	13.58	20.0	203.4	4.28	3.59	2.81	1.58
1926	61.8	131.9	49.9	110.9	11.97	12.72	14.6	143.8	3.46	2.95	1.81	1.12
1927	91.8	127.2	68.2	123.1	12.47	14.69	18.9	117.5	3.39	3.97	4.68	1.54
1928	74.3	118.9	62.3	125.1	14.73	16.79	18.7	90.4	4.67	3.28	2.82	1.22
1929	65.4	117.1	58.9	112.8	14.72	16.68	16.9	151.7	5.00	3.30	5.08	1.62
1930	46.3	79.2	41.4	90.5	10.68	11.28	10.3	102.9	3.06	3.08	2.75	0.64
1931	44.8	62.8	36.4	65.6	9.89	9.90	6.3	68.8	1.72	1.50	2.37	0.85

* 1910-1920 December 1 farm prices.

TABLE 3 (continued)

Year begin- ning July first	Rice (dollars per bushel)	Sugar beets (dollars per ton)	Grapes (dollars per ton)	Peaches (dollars per ton)	Pears (dollars per ton)	Apricots (dollars per ton)	Cherries (dollars per ton)	Raisins (dollars per ton)	Prunes (dollars per ton)	Walnuts (dollars per ton)	Almonds (dollars per ton)
1910	0.65		11	18	41	30	100	55	110	264	226
1911	0.75		11	35	34	49	116	81	125	244	268
1912	0.91		11	17	33	29	98	62	90	244	214
1913	1.00		19	19	47	45	120	70	115	282	286
1914	1.00		13	15	40	37	136	73	115	292	280
1915	0.90		16	9	25	25	112	77	100	238	210
1916	0.78	6.30	21	21	54	46	136	95	130	272	276
1917	1.75	7.60	23	32	56	56	150	110	140	350	282
1918	1.90	9.95	44	41	74	55	172	117	200	500	386
1919	2.67	14.17	55	65	80	87	200	222	300	566	390
1920	1.21	13.13	86	69	101	81	224	252	220	396	282
1921	1.15	7.51	82	34	66	55	106	158	130	442	276
1922	1.10	10.14	62	48	55	76	208	64	150	400	298
1923	1.12	13.99	40	26	46	31	196	49	120	394	230
1924	1.66	9.14	34	36	74	51	118	60	110	450	288
1925	1.70	8.21	24	36	53	61	176	76	120	410	390
1926	1.31	9.25	27	40	37	69	190	63	100	484	330
1927	1.13	9.28	28	24	57	57	166	55	80	314	312
1928	0.88	8.03	17	22	45	52	158	43	110	430	350
1929	1.05	7.28	32	62	79	69	196	67	190	324	446
1930	0.83	7.46	15	20	26	38	143	58	70	364	210
1931	0.56	7.39	26	15	30	25	80	68	62	274	162
1932	0.36	6.50	12	8	11	20	60	36	60	200	164

